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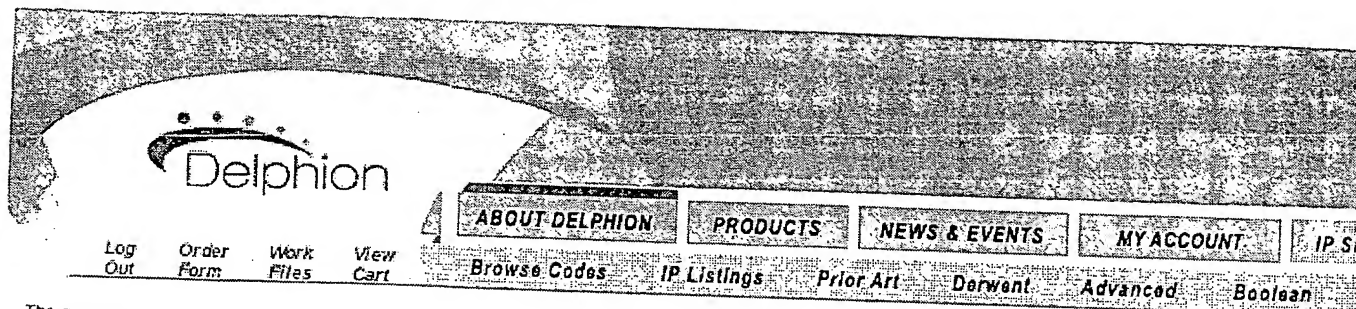
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Title: **JP2001107809A2: GAS FUEL INTERNAL COMBUSTION ENGINE**

Country: JP Japan

Kind: A2 Document Laid open to Public inspection

Inventor(s): **NAKAJIMA YASUO  
YAMANE KIMITAKA**

Applicant/Assignee: **GOTO IKUEIKAI**  
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Issued/Filed Dates: April 17, 2001 / Oct. 6, 1999

Application Number: JP1999000284977

IPC Class: **F02M 21/02; F02D 19/02; F02D 41/04; F02D 41/08; F02D 41/34;  
F02D 43/00; F02F 3/26; F02P 5/15;**

Priority Number(s): Oct. 6, 1999 JP1999000284977

Abstract:

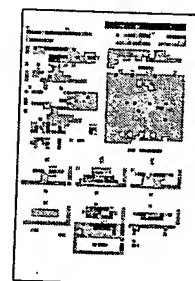
**Problem to be solved:** To provide a spark ignition type natural gas internal combustion engine provided with no throttle valve and control a load by an injection amount and to improve fuel consumption in a low load area.

**Solution:** This internal combustion engine comprises a main fuel injection valve 11 to inject natural gas in the cavity combustion chamber 14 of a piston 7; an auxiliary fuel injection valve 12 to inject natural gas to an ignition chamber 9; and an ignition plug 10 situated at the ignition chamber 9. Since, during idling, fuel is fed only from the auxiliary injection valve 12 and ignited and burnt in the ignition chamber 9, stable operation at a high excess air factor is practicable. At a partial load area, fuel is injected from the main fuel injection valve 11, and before fuel is excessively diffused in a cavity combustion chamber 14, flame generated due to combustion in the ignition chamber 9 is injected through a communication hole 13 for ignition and combustion. At a total load area, fuel is injected from the main fuel injection valve 11 in the vicinity of a bottom dead center and brought into a state approximately equal to premixture.  
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Family: [Show known family members](#)

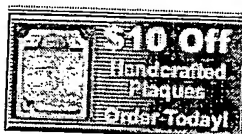
Other Abstract Info: none

Foreign References: No patents reference this one



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## PATENT ABSTRACTS OF JAPAN

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(71) Applicant: GOTO IKUEIKAI

(72) Inventor: NAKAJIMA YASUO  
YAMANE KIMITAKA

(74) Representative:

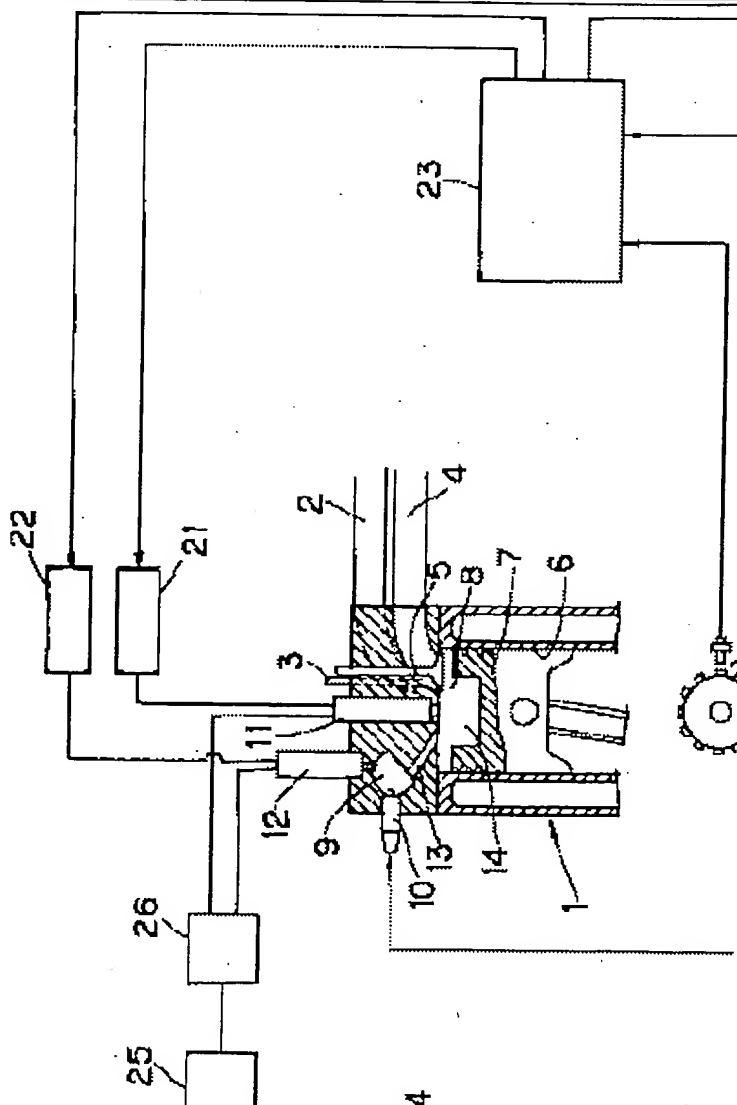
## (54) GAS FUEL INTERNAL COMBUSTION ENGINE

(57) Abstract:

**PROBLEM TO BE SOLVED:** To provide a spark ignition type natural gas internal combustion engine provided with no throttle valve and control a load by an injection amount and to improve fuel consumption in a low load area.

**SOLUTION:** This internal combustion engine comprises a main fuel injection valve 11 to inject natural gas in the cavity combustion chamber 14 of a piston 7; an auxiliary fuel injection valve 12 to inject natural gas to an ignition chamber 9; and an ignition plug 10 situated at the ignition chamber 9. Since, during idling, fuel is fed only from the auxiliary injection valve 12 and ignited and burnt in the ignition chamber 9, stable operation at a high excess air factor is practicable. At a partial load area, fuel is injected from the main fuel injection valve 11, and before fuel is excessively diffused in a cavity combustion chamber 14, flame generated due to combustion in the ignition chamber 9 is injected through a communication hole 13 for ignition and combustion. At a total load area, fuel is injected from the main fuel injection valve 11 in the vicinity of a bottom dead center and brought into a state approximately equal to premixture.

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 AN 2001:269852 CAPLUS  
 TI Gas fuel internal combustion engine. [Machine Translation].  
 IN Nakajima, Yasuo; Yamane, Kimitaka  
 PA [NAME NOT TRANSLATED], Japan  
 SO Japan Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001107809	A2	20010417	JP 1999-284977	19991006
AB	[Machine Translation of Descriptors]. The throttle valve ingredient preparation do, offers the natural gas internal combustion engine of the high tension ignition formula which can control load at the injection quantity, fuel economy of low load limits improves. Facing to inside cavity combustion room 14 of piston, 7 possesses with the spark plug 10 which is provided in the secondary fuel injection valve 12 which injects the natural gas to the main fuel injection valve 11 which injects the natural gas and ignition room 9 and ignition room 9. When idling, from only secondary fuel injection valve 12 the fuel to be supplied, because ignites burns inside ignition room 9, driving which at high excess air factor stabilizes is possible. In partial load limits, the fuel is injected first from main fuel injection valve 11, inside cavity combustion room 14 excessively to the former which the diffusion is done, the flame by the combustion inside ignition room 9 gushes from communication hole, 13 ignites burns. In full load limits, near bottom dead center the fuel is injected from main fuel injection valve, 11 becomes a state where is close to premixing.				
IC	ICM F02M021-02				
	ICS F02M021-02; F02D019-02; F02D041-04; F02D041-08; F02D041-34; F02D043-00; F02F003-26; F02P005-15				

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